Fatal Solaryum Yanığı

Fatal Burn due to Solarium

Solaryum Yanığı / Solarium Burn

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Özet

Radyasyon yanıklarının insidansı azdır ve çeşitli etiyolojilere bağlı olarak meydana gelmektedir. Ultraviyole ışıkları da radyasyon yanıklarının etkenlerinden biridir. Bu vaka sunumunda, solaryum merkezinde meydana gelmiş bir radyasyon yanığı vakası takdim edilmektedir. Solaryum cihazları tüm dünyada sıkça kullanılmasına rağmen, literatürlerde solaryuma bağlı ortaya çıkan bir fatal yanık olgusu rapor edilmemiştir.

Anahtar Kelimeler

Yanık, Solaryum, Solaryum Cihazı.

Abstract

Radiation burns are uncommon and their etiologies are various. The ultraviolet lights are also a source of radiation burns. We present a case of life-threatening radiation burn caused by long wave ultraviolet lights (UV) at the solarium center. Up to now, despite its widespread use, fatal radiation burns caused by the indoor tanning device at the solarium center have not been reported. The circumstances of this injury and preventive measures are discussed.

Keywords

Burn, Solarium, Indoor Tanning Device.

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Introduction

Ultraviolet (UV) lights are electromagnetic radiation and these lights are divided into two wavelength bands. Shortwave ultraviolet lights called UV-B (290 to 320 Nanometers) may burn the outer layer of skin. Long wave ultraviolet lights called UV-A (320 to 380 nanometers) penetrate more deeply [1-3] UV lights use for treatment and cosmetic purposes. UV lights uses to treat the variety of other skin diseases [4]. It may be used alone or in combination with other medications and agents which applied directly to the skin or taken systemically [1]. The skin conditions treated with UV light treatments are psoriasis, vitiligo, atopic dermatitis, allergy-related skin condition and hypopigmented scars [5,6]. Patients receive treatments in special light boxes or sometimes treated with hand-held devices. In addition, UV lights also uses for cosmetic purposes. Indoor tanning devices at the solarium centers emit artificial UV-A lights. Severe phototoxic reactions may occur if the patient is hypersensitive to UV-A lights [5-7]. Photosensitive drugs and agents increase the effect of UV-A light on the skin. The nature and concentration of the photosensitive medications, intensity, and duration of the UV-A and human skin type are effecting the severity of phototoxic reactions [6]. UV-A lights may cause aging of skin by damaging collagen fibers, skin cancer and life-threatening burns.

Up to now, despite its widespread use, fatal radiation burns caused by the indoor tanning device at the solarium center have not been reported in the English literature. These burns are preventable and therefore, some basic measures may reduce the incidence of accidental burn injury due to indoor tanning.

Case

A 55-year-old lady admitted to our burn care unit postburn 3. day with severe burns. She told us that the burn injury was formed while she was under the artificial UV-A lights at solarium center. At our initial examination, second and third degree burn injury areas at body (~73 % BSA) were noted. The only areas not involved were the genital region, the breasts, inframamary skin and the skin on the chest wall that was protected by the breast (Figure. 1). We investigated the etiologic factors, symptoms, signs and medical history of the patient. She had white skin, light-coloured eyes, lots of freckles, blonde hair and multiple comorbid problems, including diabetes mellitus and chronic obstructive pulmonary disease. She was using chlorpropamide and oral tetrasiclin which sensitizes skin to the damaging effects of UV-A lights.

Figure 1. The second and third degree burn injury areas at body.

The patient was immediately taken to a cleaning tank after central and arterial catheterization. She was irrigated by 37°C heated and sterilized water for 2 hours. Besides heart rate and blood pressure, the body temperature of the patient was monitored to avoid hypothermia. Blood gas analyses and metabolic status were in critical limits. The clinical and laboratory signs of presepsis were determined and noted. There were respiratory distress signs. That required immediate intubation and ventilatory support.

The patient was followed in our intensive burn care unit. In subsequent days, sepsis signs came out. She had fever and elevated white blood cell counts. Pseudomonas aeruginosa was cultured from the wounds and blood in postburn 14.day. Antibiotic therapy was begun under the direction of the infectious disease service. Burn areas were dressed with silver-coated antimicrobial barrier dressing with Nanocrystalline Silver every three day. Unfortunately, she died from systemic inflammatory response syndrome (SIRS) at 25. days.

Discussion

UV lights are part of the electromagnetic spectrum that reaches the earth from the sun. These wavelengths are classified as UV-A, UV-B, or UV-C. However, only, UV-A

and UV-B penetrate the atmosphere. UV-C usually gets absorbed by the ozone layer before it reaches the earth. 95 % of all UV lights are UV-A, though less intense than UV-B lights.

Over exposure to UV lights may cause DNA damage, premature wrinkling of the skin, light-induced skin rashes, eye injury, developing skin cancer, and sunburn up to severe bullous reaction [7]. Studies suggest that children and adolescents are harmed more by equivalent amounts of UV lights than adults [8].

UV-B radiation burns the the epidermis layer of skin, causing sunburns [7]. UV-A rays are less to cause burning than UV-B lights. UV-A lights are used for cosmetic purposes.The high-pressure sunlamps used in tanning devices emit doses of UV-A as much as 12 times that of the sun. UV-A lights penetrate to the lower layers of the epidermis, where they trigger cells called melanocytes to produce melanin pigment. UV-A lights produce a rise of the skin surface temperature up to 42-44 centigrade immediately followed by an erythema and induce immediate pigment darkening for protecting itself against burns [7]. Studies suggest that people with skin type-1 don't use tanning device. They generally have one or more of the following characteristics (White skin, light-coloured eyes, and lots of freckles, red or blonde hair) [8].

Photosensitive medications increase the effect of UV-A light on the skin. Factors affecting the severity of phototoxic reactions are as follows: the nature and concentration of the photosensitive drug and agents, the duration of exposure to the UV-A light, the intensity of UV-A, and radiation absorption in the skin. These drugs allow the deeply penetrating UV-A light to skin. In our case, the patient with skin type -1 was using chlorpropamide and oral tetrasiclin which sensitizes skin to the damaging effects of UV-A light. Exposure to UV-A light associated with photosensitive agents use may cause life-threatening skin burns and phototoxic reactions when used in an erratic manner [7, 8]. Sometimes, UV light treatments are given in combination with photosensitizing agents, which maximize UV's effects on the skin. These potential effects should be weighed against the potential benefits of the treatment.

The protection from artificial sources of UV-A light is important. There is growing concern among leading international organizations regarding the continued expansion of the solarium industry around the world and the health risks imposed from resultant increased exposure to UVR by individuals who use tanning device. The exposure limits to UV-A according to skin type and life-long activity are so important to prevent phototoxic reactions.

This case report is to summarize the potential adverse effects of exposure to artificial UV-A lights for cosmetic purposes. The phototoxic reactions due to indoor tanning device are preventable and therefore, some basic measures may reduce the incidence of accidental burn injury due to indoor tanning device.

1.The indoor tanning device manufacturers have to post warnings in their owner's manuals of the danger of potential phototoxic reactions.

2. The indoor tanning devices have to be tested at regular intervals to increase their safety by manufacturer and. solarium operators

3. Medical history and skin assessment for first solarium appointment have to evaluate by solarium operator. The solarium program should be created according to the goals and skin's needs.

4 . The people with skin type-1 have not to use indoor tanning device.

5. Patients who receive photosensitive drug and agents have to take care to avoid exposure to UV-A light.

6. The legal restriction on tanning device use by young people (< 18) would be a necessary step for preventing skin cancer

We hope that this case report will succeed in raising awareness of the dangers involved in the solarium centers.

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